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BOOK REVIEW

Workshop on automated beam steering and shaping (ABS)
(Proceedings, CERN, Geneva, Switzerland, 14-16 December 1998)
edited by M Lindroos
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Beam steering is the most important control during operation of a large accelerator complex that involves multiple machines in tandem. Control of emittance growth during injection from one accelerator to the other and during acceleration due to non-ideal conditions, is particularly important when colliding beams are involved. The luminosity is seriously affected if emittance growth is beyond acceptable values. Also, the emittance of beam must be very small for third generation synchrotron radiation sources. In view of these facts, beam steering mechanisms are of utmost importance in accelerator design. In-depth studies of errors and their estimates both in design calculations and in fabrication, are involved.

The report on the Workshop on Automated Beam Steering and Shaping (ABS), CERN, Geneva, Switzerland, 14-16 December 1998 presents the beam steering philosophies adopted by different accelerator groups all over the world. The complexity of problem is highlighted. Almost all the major accelerator facilities have been covered in this Workshop. Extensive theoretical as well as computational works have been reported. Involvement of complex accelerator physics formulations and advanced mathematical methods to solve the problem have been discussed. A general tendency is to limit the number of correcting and sensing elements. Beam position monitors play a great role in beam steering as sensing elements. Philosophy behind algorithms developed by various accelerator groups for automated control of steering and correction have been discussed.

The report contains highly specialised information which is relevant only to the accelerator complexes. It should be extremely useful to keep in an accelerator laboratory.

R K BHANDARI
Superconducting Cyclotron & Accelerator Physics Group,
Variable Energy Cyclotron Centre,
1/AF Bidhan Nagar, Calcutta-700 064